quire medicinal treatment as well, but early emphasis by physicians about personal habits shows that a patient's life-style has contributed to his or her illness and that moderating harmful habits would greatly enhance the effect of medication, resulting in lowered doses, fewer side effects and cost containment, and give patients a sense of control over their own health.

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Diet and Cancer

DESPITE ADVANCES in treatment, age-adjusted mortality rates of cancer have continued to increase at a rate of about 3% every decade. Data on secular trends in incidence are less reliable, but it is probable that age-adjusted incidence rates are increasing at an even greater rate. Most of the increases can be attributed to cigarette smoking, but many cancers unrelated to smoking (such as colorectal cancer) remain as important causes of death. The number of deaths each year due to colorectal cancer (about 60,000) is second only to lung cancer (about 126,000), and it is the leading cause of cancer death in nonsmokers.

Diet appears to play a role in the risk of colorectal cancer. Burkitt's observation with Trowell, Cleave and others that Africans appeared to be at very low risk for colorectal cancer stimulated others to examine the effect of dietary fiber in case-control studies. Several such studies supported the idea that fiber might reduce the risk of colorectal cancer, whereas others were inconclusive. Graham in upstate New York observed that certain vegetables (broccoli, cabbage and brussels sprouts) were associated with a particularly low risk of colorectal cancer.

We suggested that vitamin D and calcium might reduce the risk of colorectal cancer, based on the strong geographical gradient for colorectal cancer in the United States and throughout the world. In particular, colorectal cancer seemed to occur much more frequently in places distant from the equator than in equatorial regions. This theory stimulated further investigation of the possible role of dietary vitamin D and calcium because a principal effect of latitude is increased synthesis in the skin of vitamin D from cholesterol and increased intestinal uptake of calcium.

In a recent study we examined the risk of colorectal cancer according to dietary intake of calcium and vitamin D in Chicago men. Because the men lived in a place where there is relatively little sunshine, well below the US median for solar energy from ultraviolet light at ground level per day, we speculated that dietary sources of vitamin D would be important.

The results of this study show that men who had the lowest intake of vitamin D and calcium had nearly three times the risk of colorectal cancer as men who had the highest intake. Men with intermediate intakes had an intermediate risk of colorectal cancer.

This finding can be added to the work of Shekelle, Bjelke and others showing a protective effect of the carotenes, vegetable-derived previtamin A, on the risk of lung cancer and that of Graham and others showing protective effects of citrus fruit on cancer of the upper gastrointestinal and respiratory tracts. Another study by Phillips showed a reduced risk of many varieties of cancer in association with a Seventh-Day-Adventist (vegetarian, nonsmoking, non-alcohol-drinking) life-style.

A diet to reduce the risk of cancer would include 2.5 to 3 glasses a day of nonfat milk (or 1,000 mg of calcium and 200 to 400 international units of vitamin D_3 per day for lactose-intolerant persons), yellow and green leafy vegetables at least once a day and citrus fruit or juice daily. Such a diet would also require moderation in the use of alcohol (two or fewer drinks, glasses of wine or bottles of beer per day). Restricting fat intake to no more than 20% to 30% of calories and including a bran muffin or the equivalent in dietary fiber every two days would likewise be prudent.

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Hyperlipidemia and Preventing Coronary Heart Disease

THE ASSOCIATION between hyperlipidemia, especially high low-density-lipoprotein cholesterol, and the incidence of coronary heart disease is a consistent finding in most, if not all, prospective population studies. Indeed, the observed association meets the established scientific criteria for causation and poses two important questions for clinicians. The first question is whether a blood cholesterol-lowering regimen should become a routine part of a practitioner's efforts at prevention. The second question, more strategic than conceptual, is what should be the target population for such a regimen?

Clinical trials on secondary prevention of coronary heart disease—that is, preventing death following acute myocardial infarction—have failed to show a beneficial effect of reducing the blood cholesterol level by dietary means, cholesterol-lowering drugs or both. Thus, in regard to secondary prevention of coronary heart disease, the first question cannot be answered in the affirmative. This makes the second question moot.

As for primary prevention—that is, preventing disease before it strikes—there is evidence that lowering blood cholesterol levels could be beneficial in some persons. Results of a recently completed trial in the Lipid Research Clinical Centers showed that the combination of a prudent dietary regimen and a cholesterol-lowering drug, such as cholestyramine, reduced the incidence of fatal and nonfatal coronary heart disease in men with average blood cholesterol levels of 260 mg per dl and above. Thus, the answer to the first question for primary prevention of coronary heart disease is a qualified

yes. This leaves the issue of the target population for prevention open for debate.

There are two models in practice for preventing coronary heart disease. One is a community model in which the target population is the total community. The desired program is aimed at the general population regardless of the level of risk among persons within that population. The other is a medical model of prevention in which the target population consists of persons at high risk who are identified in advance and the desired prevention program—that is, the blood cholesterol-lowering regimen—is targeted at them directly, under medical supervision.

The evidence on the efficacy of a cholesterol-lowering regimen for primary prevention of coronary heart disease is supportive, at best, of a prevention program only under a medical model. Physicians have a unique opportunity to primarily prevent coronary heart disease in their practices by identifying persons with high levels of blood cholesterol (260 mg per dl and above), especially when other risk factors such as hypertension, obesity and cigarette smoking are present, and intervening according to a medical model of prevention under their supervision.

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Preventing Falls in Elderly Persons

FALLS IN THE elderly are a prevalent cause of injuries and an important cause of morbidity and mortality. The cumulative yearly incidence of falls in elderly populations may be 30% to 40%, with 8% to 40% of falls resulting in fractures and 3% of falls resulting in hospital admission. Only half of the elderly patients admitted to hospital as a result of falls are alive one year later.

Primary prevention of falls includes removing hazards in the home. Standard environmental hazards are loose rugs, extension cords, slick bathtubs, stairs and poor lighting. Ambient temperature may be a hazard, as thin or undernourished elderly patients may fall due to lack of coordination resulting from hypothermia. Thin elderly women with hip fractures have lower body temperatures on admission to hospital than do well-nourished elderly women with hip fractures.

Secondary prevention of falls—that is, preventing their recurrence—depends partly on a clinical examination to search for reversible intrinsic causes. There is no validated screening protocol for falls available, and the differential diagnosis of falls is extensive. A prudent physician would search first for risk factors that merit treatment irrespective of their association with falls, such as visual problems, foot problems, drug toxicity, cardiac arrhythmias, seizure disorders and muscle weakness due to thyroid disease. Intervention to modify other risk factors, such as physical therapy for abnormal gait or a cane for abnormal balance, may be appropriate. At present, however, few data exist documenting the efficacy of risk-factor screening or modification in preventing falls.

More data have accumulated that falls are related to declining physical function. In one study, controlling for functional state eliminated the association of falls with age. In a study of predictors of falls in women with Alzheimer's disease who were in an institution, falls were more closely related to physical decline than mental decline. Hand strength, which correlates with overall body strength, is a predictor of falls and a predictor of complications from an operation for hip fracture. Muscle biopsies at the time of surgical procedure in patients with hip fractures show more leg muscle atrophy than is present in the general population.

A careful clinical examination of patients who fall seems reasonable. Due to the large number of causes for falls and the relationship of falls with physical function, a fall may be a sentinel event for the onset of a disease or of a decline in physical function. Presumably, interventions to prevent falls and to prevent further physical decline are more effective if initiated early. Exercise may have a role in the primary prevention of injury due to falls, as studies show that exercise in the elderly can maintain or increase bone mass as well as increase muscular strength and endurance.

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Disease Outbreaks in Day-Care Centers

THE INCREASING PROPORTION of mothers who are working has resulted in an increase in the number and importance of facilities where children can be cared for during the working day. These vary from neighbors who take care of as few as two to four children within their homes as licensed or unlicensed "day-care homes" to licensed day-care centers that take care of a few dozen to a few hundred children. The children may range in age from 3 months to kindergarten level.

Aggregating these children into a common area, with common playthings, provides an ideal opportunity for the spread of infectious agents by direct contact, by fomites and by airborne droplet nuclei. In addition, these children must be fed, either snacks or meals, from kitchens not usually staffed, equipped or designed for the level of food sanitation required for public eating places. Consequently, diseases spread by the fecal-oral route are frequent, especially when non-toilet-trained infants and toddlers are present. The disease of greatest significance is hepatitis A, which was found in one study to have an asymptomatic-to-symptomatic ratio of 22:1 among day-care children younger than 3 years, this in contrast to a ratio of 1:8 among the staff of a day-care facility. Clinical cases occurred in 88% of the households that had a child in the center. Outbreaks of diarrheal disease, especially shigellosis and giardiasis, have occurred frequently; during